

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT**REMARKS**

Claims 16, 17, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45 and 50 were considered in the Office action. Claims 70-72 are new. New claims 70-72 have been added to attempt to address concerns raised by the Examiner in the previous Office action. Support for these new claims can be found in the Specification, for example, as follows:

- claim 70: claims 16 and 17;
- claim 71: claims 16 and 20; and
- claim 72: page 10, lines 17-22.

Applicants have not cancelled claims 20-23, 27, 29, 34-36, 40, 44, 46-49 and 51-58 and request that the Examiner consider them upon allowance of a generic claim.

Applicants have amended claim 17.

Applicants have amended the specification to correct an obvious typographical error on page 20; no new matter has been added.

**Response To 112 Rejections**

Claims 16, 17, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45 and 50 stand rejected under 35 U.S.C. § 112 as allegedly being indefinite and as failing to meet the written description requirement. Applicants traverse these rejections.

**Indefiniteness**

Independent claims 16 and 42 remain rejected as allegedly indefinite. Applicants submit that the phrases "using the polymerization performance as a figure of merit for planning ..." and "using the determination as a figure of merit for planning..." as used in independent claims 16 and 42 respectively, are not confusing to those of skill in the art. "Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification." *MPEP 2173.05(b)*. Applicants submit that those of skill in the art readily understand these phrases to mean that a result of the polymerization reactions, whether they are polymerization performance of the catalyst or a property of the polymer sample, are used as a figure of merit in order to determine which samples (e.g., catalysts) of the array, if any, should undergo further testing or not. The phrase "figure of merit" is well understood in the art

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

to indicate a chosen property or characteristic used to determine which samples will pass the first screen and move to a second screen or other testing. For example, the figure of merit can be molecular weight, polydispersity index, heat emitted, and/or catalytic activity. Support for this is found throughout the Specification. See, for example, page 8, lines 25-28:

The present invention offers particular advantages over previous olefin polymerization and copolymerization primary screening techniques, which, even though useful, have focused on the use of Infrared Thermography (IRT) to detect the heat of reaction, using heat emitted as the figure of merit for the screen.

And also, page 9, lines 5-7:

The polymer molecular weight and polymer concentration (reflecting catalyst activity), and optionally the shape of the distribution curve, e.g., unimodal vs. bimodal, are used as figures of merit in the screen.

And also, page 38, lines 10-20:

The term "screening," including "primary screening" and "secondary screening," is used herein in its broadest sense to refer to a technique that identifies one or more desired properties of a library member. In combinatorial chemistry, screens are often used successively to identify progressively smaller or more focused groups of libraries that include more of the desired properties (quantitatively, qualitatively, or both) than do others of the screened group. For example, a primary screen may be used to test 5000-50,000 catalyst candidates for a particular property, and may identify 20-100 of the candidates as having the figure of merit as set by the primary screen. Those candidates can be tested in a secondary screen to identify candidates that appear to have superior properties or (in the case of catalysts) produce superior results. This small number of "lead candidates" are then developed and studied in the greatest detail.

Furthermore, the Example section clearly illustrates this feature. A primary screen of 16 catalyst candidates was reacted with 1-octene. The results are displayed in Table 3. Using polymer concentration as the figure of merit, a further screen, co-polymerizing ethylene and 1-octene with candidate 12 is planned and carried out.

Additionally, Applicants submit that the term "figure of merit" is not a relative term as defined in *MPEP 2173.05(b)*. The Office action states that the phrase is relative because it does not indicate how the information is to be used and the value of the figure of merit. Breadth of a

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

claim is not to be confused with its definiteness. The figure of merit can be used in any way, for example, to set a hurdle over which candidate catalysts must pass. Furthermore, the claims do state how to use the information. The phrases require using the figure of merit to plan additional screens or experiments.

With regards to the Office action's response to the previous arguments set forth by Applicants, Applicants submit that the terms "threshold performance" and "set sufficiently high" as discussed in the Declarations and Attorney's arguments, were used strictly in an exemplary manner to explain the phrases in the claims and were never intended to be incorporated into the claims. However, the Office action's rejection appears to rely upon the alleged indefiniteness of these terms to render independent claims 16 and 42 indefinite.

Office policy regarding rejections under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph was recently clarified in advance of notice to changes to MPEP §2173.02 (*See* Memorandum from Stephen G. Kunin to Technology Center Directors dated January 17, 2003). This memorandum underscores the importance, in view of recent developments in case law, of a critical analysis as to whether a rejection under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph is warranted. In particular, it is noted that

during examination of claims for compliance with the requirement for definiteness... some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the Examiner might desire. ... (T)he Examiner must consider the claim as a whole to determine whether the claim apprises one of skill in the art of its scope, and therefore, serves the notice function required (under the statute).

*See* the 2<sup>nd</sup> paragraph of the Memorandum from Stephen G. Kunin to Technology Center Directors dated January 17, 2003 (emphasis added). Also, it is expressly stated that if the Examiner determines that a rejection is proper after having given such careful analysis, that

an analysis as to why the phrases(s) used in the claims is "vague and indefinite" should be included in the Office action.

*See* the 5<sup>th</sup> paragraph of the Memorandum from Stephen G. Kunin to Technology Center Directors dated January 17, 2003 (emphasis added).

Applicants respectfully submit that in view of the Office policy outlined above, the rejections made under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph, in this Office action appear unfounded based upon a plain reading of the claim language, and in particular based upon a reading of the claim language in the context of the specification.

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

Applicants respectfully request this rejection be withdrawn.

Written Description

The Office action rejects claims 16, 17, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45 and 50 under 35 U.S.C. §112, 1<sup>st</sup> paragraph, as containing subject matter which was not described in such a way as to reasonably convey to one of skill in the art that Applicants were in possession of the claimed invention. Specifically, the Office action states that certain aspects of the invention are broadly defined (e.g., prediction and planning steps), and asserts that the disclosure does not support the claimed genus or substantial portion thereof, and is therefore inadequate to show possession of the invention.

Applicants respectfully submit that each of the pending claims is supported by the entirety of the specification as filed. Specifically, a skilled artisan would have recognized that Applicants were in possession of the invention, as presently claimed, at the time the parent application was filed.

The specification undeniably establishes that the Applicants considered their invention to include methods for planning of additional screens and predicting the polymerization activity of potential catalysts for at least a second monomer. See, generally for example, the various embodiments described in the "Summary of the Invention", including at page 4, lines 22-24:

It is another object of this invention to screen potential olefin polymerization catalysts in parallel or in array format for catalyst activity using one or more monomers to predict catalyst activity with different monomers.

See also page 4, line 25 – page 5, line 3:

It is yet a further object of this invention to predict catalyst performance for the homopolymerization of a first monomer using the homopolymerization of a second monomer. It is an object of this invention to predict catalyst performance for the co-polymerization of a first and second monomer using the homopolymerization of either the second or a third monomer. It is still a further object of this invention to predict catalyst performance for the co-polymerization of a first and second monomer using the co-polymerization of either second and third monomers or third and fourth monomers.

page 5, lines 8-14:

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

The invention meets these objects with a method for screening potential catalysts for polymerization performance. The method comprises reacting a potential catalyst with at least a first monomer under polymerization conditions, determining the polymerization performance of the catalyst with the at least first monomer, and using the determination as a predictor for the polymerization performance of the catalyst for at least a second monomer, wherein the first and second monomers are different from each other and the first monomer is an olefin other than ethylene.

page 8, lines 15-24:

In yet another aspect, the invention uses a specific liquid  $\alpha$ -olefin in a primary screen to predict catalyst performance with other monomers, singly or in combination, for homopolymerizations and/or copolymerizations. For example, catalyst performance for 1-octene homopolymerization can be used to predict catalyst performance for propylene homopolymerizations, and for ethylene/octene and ethylene/styrene copolymerizations. 1-octene homopolymerizations can also be used to predict other polymerizations, as those of skill in this art will appreciate from the review of this specification. Furthermore, the degree of  $\alpha$ -olefin incorporation into a copolymer containing the  $\alpha$ -olefin can be predicted from the performance or molecular weight from the  $\alpha$ -olefin homopolymerization primary screen.

and page 11, lines 13-23:

In particular, those skilled in the art of olefin polymerization are generally familiar with the reaction rates of olefins (i.e., those olefins most commonly used for commercial polymers) relative to each other. See, Krentsel, POLYMERS AND COPOLYMERS OF HIGHER  $\alpha$ -OLEFINS: CHEMISTRY, TECHNOLOGY, APPLICATIONS, Hanser/Gardner, Cincinnati, Ohio (1997). Accordingly, the definitive information that the invention provides about the first polymer is quite useful in this art for the planning and execution of additional screens, laboratory or commercial polymerization or copolymerization, or other necessary or desired tasks. Stated differently, the screening method of the invention—standing alone and even in the absence of further steps—provides a useful, concrete and tangible result that has practical utility to those of skill in this art.

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

Furthermore, the Example section clearly illustrates this feature. A primary screen of 16 catalyst candidates was reacted with 1-octene. The results are displayed in Table 3. Using polymer concentration as the figure of merit, a further screen, copolymerizing ethylene and 1-octene with candidate 12 is planned and carried out.

Significantly, the scope of the presently-pending claims are entirely consistent with the scope of the invention as disclosed in the specification. In such a situation, with respect to written description concerns,

(t)he Examiner has the initial burden of presenting evidence or reasons *why* persons skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims.

*See In re Wertheim*, 191 USPQ90, 96 (CCPA 1976) and MPEP § 2163.04 (emphasis added).

In the present case, however, the Office action sets forth only conclusory allegations with respect to the support provided in the specification. As discussed below, the Office action does not present evidence or delineate why the specification is considered to lack support. As such, the Applicants respectfully assert that the Office action does not establish, *prima facie*, that the specification lacks support under 35 USC 112.

The written description requirement does not require the applicant 'to describe exactly the subject matter claimed, instead the description must clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed.

*Moba B.V. v. Diamond Automation, Inc.*

In short, the words "planning" and "predicting" readily convey distinguishing information such that one of ordinary skill in the art could visualize or recognize the identity of the members of the genus and that Applicants have invented what is claimed. The law requires nothing further.

Applicants request that these rejections be reconsidered and withdrawn.

#### **Response To Obviousness Rejection**

Claims 16, 17, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45 and 50 remain rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Van Tol et al. (WO 97/42232) in view of Willson (WO 97/32208). Applicants traverse the rejections on the ground that a *prima facie* case of obviousness has not been established because not all of the claim limitations are taught or

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

suggested. Claims 16,17, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45 and 50 are not obvious in light of Van Tol and Willson. Importantly, the Examiner has read important claim limitations out of independent claims 16 and 42 in order to argue that the remaining claim elements are disclosed by Van Tol.

The Examiner has relied upon Van Tol as teaching the claim element of "the polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the performance of the potential catalysts for at least a second monomer." Applicants respectfully disagree with this interpretation of Van Tol. Van Tol discloses polymerizing octene with one catalyst and in one example and using a second catalyst to co-polymerize octene and 1-octadecene in another example, and using a third, different catalyst to co-polymerize octene and ethylene in a third example.

None of the polymerization performances of the catalysts of Van Tol is determined for at least a first monomer as a predictor for the performance of the catalyst for at least a second monomer. The co-polymerizations of Van Tol involve distinctly different catalysts than the catalyst used to polymerize octene. Furthermore, Van Tol fails to disclose using the polymerization performance of the polymerization reaction(s) of the array of catalysts as a figure of merit for planning of additional screens, laboratory or commercial polymerizations or co-polymerizations. Van Tol does not disclose any figure of merit, prediction, planning of additional reactions, or screening of catalysts. Van Tol neither plans or performs no further polymerizations with other monomers using the same catalysts used to polymerize the first monomer based on the initial polymerization results.

The Office action also asserts in the Office action at Paragraph 11, that Van Tol discloses copolymerizing the first and second monomer using the catalysts. Applicants respectfully disagree based on the absence of disclosure in Van Tol of performing a copolymerization of the first and second monomer with the catalyst(s) used to polymerize the first monomer. The catalysts referred to by the Office action, as stated in the Specification at page 11, lines 24-25, clearly include at least one of the catalysts of the original array used to polymerize the first monomer. This feature is absent from Van Tol.

In contrast to Van Tol, the methods of the present invention are used, for example, as a screening tool, in which the array of catalysts (via the figures of merit) are compared to each other and/or other known standards to determine which catalysts will be further experimented

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

upon. Typically, the catalyst must overcome a benchmark of performance, which is typically set sufficiently high so that many catalysts do not meet that performance (effectively thus screening the catalysts for performance and not just simple utility). Also, the comparative numerical property may be set high enough that a prediction can be made about the catalyst when the performance of the catalyst (figure of merit) exceeds the benchmark.

The Office action states that the features of a "benchmark" and "set sufficiently high" are not present in the claim. Applicants agree and submit that the remarks are not and were not made to be included in the claims, but to show an example of how the figure of merit works with the planning and predicting steps in order to illustrate the shortcomings of Van Tol.

The dependent claims additionally distinguish Van Tol. Claim 17 requires the step of copolymerizing the first and second monomers using one of the catalysts in the array in addition to the limitations of independent claim 16, which include polymerization of the first monomer with the array of catalysts. The catalyst used for this second polymerization is one of the catalysts of the array used for the first polymerization. Van Tol does not teach or suggest this second polymerization step. The Van Tol reference describes three different catalysts used to polymerize three different monomers or monomer combinations. There is no consistent use of a single catalyst with different monomers. Van Tol simply uses different catalysts with different monomers.

In short, Van Tol fails to disclose numerous elements of the claimed invention.

Applicants further submit that Willson does not cure Van Tol's deficiencies. Willson does not teach or suggest using the polymerization performance of a catalyst with one monomer to predict the polymerization performance of the same catalyst with another monomer (or other monomers), or using the polymerization performance as a figure of merit for planning of additional screens, laboratory or commercial polymerization or copolymerization.

For at least these reasons, all of the pending claims are patentable over Van Tol in view of Willson.

With regards to the Office action's response to Applicants arguments, Paragraph 11 of the Office action asserts that Van Tol reads on the predictor limitation because "[t]here are no specific values or algorithms that are to be used in making [the] prediction." However, Van Tol does not disclose the prediction or the planning step and there does not need to be any specific value or algorithm to make this claim patentable over the art of record. The Office action makes



Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

the conclusory statement that "prediction" and "planning" are mere mental steps and that prior art processes could be used for this purpose. This is not the standard. The Office action has cited no authority for this rejection and Applicants can find none. The claim limitation is present and must be considered as a part of the whole claim. Independent claim 16 recites "using as a predictor" and "planning of additional screens, laboratory or commercial polymerization or copolymerization." Van Tol does not disclose any sort of prediction or screening design. Therefore, the limitation in the claims of determining the polymerization performance of the potential catalysts for at least a first monomer as a predictor for the polymerization performance of the potential catalysts for at least a second monomer does not require any additional limitations in order to be patentable over the art of record. This limitation, read with the claim as a whole is patentable over Van Tol.

Paragraph 13 of the Final Office action alleged that limitations set forth in the preamble of the independent claims are not accorded any patentable weight. The preamble phrase, "wherein the polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the polymerization performance of the potential catalysts for at least a second monomer, the first and second monomers being different from each other and the first monomer being an olefin other than ethylene" of claim 16, is more than a mere statement of purpose, and the language is essential to particularly point out the invention defined by the claims. This is demonstrated by reliance on the preamble in the body of the claim. The purpose of the screen is to find catalyst that will polymerize a second monomer. This is accomplished by predicting the ability of a catalyst to polymerize a second monomer based upon the results of the polymerization of the catalyst with a first monomer. The prediction is tied to a figure of merit from the first polymerization, and resulting in the planning of additional reactions. Since the phrase is essential to point out the invention, it constitutes a limitation on the claims. See *Kropa v. Robie*, 187 F.2d 150 (CCPA 1951). The Office action has failed to read the preamble within the context of the entire claim. "[I]f the claim preamble is 'necessary to give life, meaning, and vitality' to the claim, then the claim preamble should be construed as if in the balance of the claim." *MPEP 2111.02*(citing *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 51 USPQ2d 1161, 1165-66 (Fed. Cir. 1999)). A review of the entirety of the record should make clear that the preamble of independent claim 16 is a limitation and not a mere statements of purpose. The Office action has improperly failed to read the limitation into the claim.

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

Paragraph 14 of the Office action states that the limitations appear to be directed at the intended use of the claimed method. The Office action failed to respond to Applicants previous remarks that the claims are not intended use claims. The claims are also not process of making claims, as is asserted in the Office action. The claims at issue are methods for screening catalysts. The claimed limitations are not merely an intended use. The limitations are process steps for screening catalysts and the process steps claimed are not the same as those disclosed in Van Tol. The invention is not an intended use of Van Tol's process for single polymerization. Van Tol does not disclose the step of "using the polymerization performance [of the catalyst with a first monomer] as a figure of merit for planning of additional screens, laboratory or commercial polymerization or copolymerization [with a second monomer]." The preamble limitations state that the additional screen, laboratory or commercial polymerization or copolymerization utilizes the same catalyst and a second monomer based on the results of the results of the first monomer and the catalyst. This is not disclosed or taught by Van Tol. The difference is that in the present invention the polymerization performance of the potential catalysts is determined for at least a first monomer as a predictor for the polymerization performance of the potential catalysts for at least a second monomer. This is a feature that is not present in any of the art of record, specifically, Van Tol.

Paragraph 15 of the Office action states that "predicting" and "planning" are mental acts that have no patentable weight. Applicants submit that these elements do have patentable weight and that the Office action has improperly excluded elements from the claim. "[W]hen evaluating the scope of a claim, every limitation in the claim must be considered. Office personnel may not dissect a claimed invention into discrete elements and then evaluate the elements in isolation. Instead, the claim as a whole must be considered." *MPEP 2106*. "The claimed invention must be considered as a whole." *MPEP 2141.01*. "In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious." *MPEP 2141.02* (citing *Stratoflex, Inc. v. Aeroquip Corp.*, 218 USPQ 871 (Fed. Cir. 1983)). The Office action has cited no authority for removing elements of a claim from analysis under a 103 examination. Patentable weight determinations are made under a 35 U.S.C. 101 analysis. The standard has been improperly applied in this 103 analysis. Therefore, the planning

Application Serial No. 09/596,851

Attorney Docket No. 99-109RCE  
PATENT

and predicting step do have patentable weight and need to be considered. Applicants further assert that these limitations are not taught or suggested by the prior art of record.

Furthermore, Applicants continue to traverse the existence of any motivation for combining Van Tol and Willson. The motivation for combination in the Office action is based on the desire to "discover the optimum or workable ranges by routine experimentation" citing to *In re Aller*. However, the present invention is not directed simply toward discovery of the optimum or workable ranges for otherwise known catalysts. Although Applicants agree that Willson is directed toward testing catalysts in parallel, Willson does not disclose criteria for selecting among polymerization catalysts based on a prediction of polymerization performance, and further testing based on that prediction used as a figure of merit. Van Tol is directed toward certain polymerization catalysts. The only motivation for combination that is apparent to Applicants is that both references refer to polymerization, which is insufficient.

Finally, Applicants note that the Office action has failed to give any weight to the evidence submitted by Applicants, to the extensive analysis of Van Tol or to the evidence of commercial success. The evidence supports patentability.

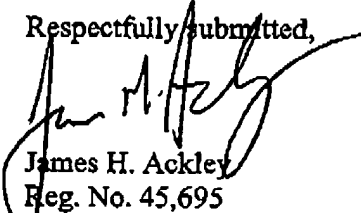
Therefore, Applicants assert that a prima facie case of obviousness does not exist for the pending claims in view of the references relied upon in the Office action.

Applicants request reconsideration of this application.

Date: 1/14/04

Symyx Technologies, Inc.  
3100 Central Expressway  
Santa Clara, California 95051  
Tel.: (408) 720-2598  
Fax: (408) 773-4029

Respectfully submitted,



James H. Ackley  
Reg. No. 45,695  
Attorney for Applicant(s)